CLAIMS

What is claimed is:

1. A control method for controlling a speed of a movable machine element of a numerically controlled industrial processing machine with jerk limitation, comprising the steps of:

decomposing a travel path of the movable machine element into a plurality of sequentially arranged, interpolatable travel sections;

determining jerk profiles for the interpolatable travel sections; and

modifying the jerk profiles with a parameter-dependent shape function, with the modified jerk profile in a corresponding travel section providing a filter action represented by bandpass filters having blocking frequencies,

wherein the blocking frequencies of the bandpass filters correspond substantially to characteristic frequencies of the machine element.

2. The control method of claim 1, wherein the parameter-dependent shape function is defined by at least one parameter α_i.

3. The control method of claim 1, wherein the parameter-dependent shape function is defined by a single parameter α.

4. The control method of claim 3, wherein the parameter-dependent shape function is obtained by adding a rectangular shape function and a $\cos^2$ or $\sin^2$ shape function.

5. The control method of claim 3, wherein the parameter-dependent shape function is obtained by adding a rectangular shape function and a Dirac shape function.

6. The control method of claim 1, wherein the shape of the jerk profile is modified by the parameter-dependent shape function so that an area of the jerk profile after the modification is identical to an area of the jerk profile before the modification, computed over an identical time interval.

7. The control method of claim 1, and further comprising the steps of before executing a defined travel path of the movable machine element, determining rectangular jerk profiles optimized for the corresponding interpolatable travel sections, such that the blocking frequencies of the bandpass filters coincide essentially with the characteristic frequencies of the machine element, and further modifying the optimized rectangular jerk profile with the parameter-dependent shape function.

8. The control method of claim 1, wherein the industrial processing machine comprises a machine selected from the group consisting of machine tool, production machine and robot.